PRIMARY TYPHLITIS WITHOUT APPENDICITIS.*

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THE prevalent surgical teaching, that practically all acute, inflammatory conditions in the right iliac fossa are due to appendicitis, led the writer to make a grave error in diagnosing the conditions present in a patient the details of whose case will be related later. This teaching was so deeply fixed that even after the abdomen had been opened, a correct diagnosis was not formulated. The result of this error was so fraught with disaster to the patient that I resolved to investigate the question of whether an acute primary inflammation of the cæcum (typhlitis) occurs independently of any lesion of the appendix. We naturally exclude, from such an inflammation of the cæcum, the specific diseases of typhoid, dysentery, actinomycosis, tuberculosis, etc. By this typhilitis is meant a primary, localized inflammation of the cæcum which begins in the mucosa and which may go on to ulceration and perforation. The subject has been the origin of much controversy and a consideration of the views of different authors brings up many conflicting opinions. The results of my researches in regard to this topic are set forth in the following pages. I shall quote the opinions of many authorities both pro and con, together with the recorded cases of the past seven years, and shall endeavor by the evidences thus set forth to arrive finally at some conclusions as to two definite questions:

1. Does a primary, non-specific typhlitis occur without prior involvement of the vermiform appendix?

2. Does appendicitis follow such a primary typhlitis?

In the Pathology by Delafield and Prudden, 1901, is the following: "Catarrhal inflammation of the cæcum is not uncommon. It is usually produced by an habitual accumulation of

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fæces in this part of the intestines. The course of the inflammation is usually chronic but marked by acute exacerbations. At first the mucous membrane undergoes the ordinary changes of chronic catarrhal inflammation. To this may succeed a slow suppurative inflammation which extends through the wall of the intestine and gives rise to ulcers and perforations."

Osler (Practice of Medicine) dismisses the subject of typhlitis with these few words: "With rare exceptions we know that the cæcum is not affected and even the condition described as stercoral typhlitis is in reality appendicitis." He, however, in another place records two cases of perityphlitic abscesses following ulcerations of the cæcum.

In the Text-Book of Pathology by Alfred Stengel, 1906, is the following: "Typhlitis or cæcitis may be due to the irritation of the intestinal contents in consequence of constipation (stercoral typhlitis). This affection is probably very frequent, though it leads to no severe consequences and occasions no urgent symptoms. Typhlitis is probably generally of the simple, catarrhal variety, but in obstinate constipation or obstruction of the colon, ulceration may occur. Perforation or extension to the surrounding tissues (perityphlitis) is the rarest of all consequences. Usually the latter is secondary to inflammations of the vermiform appendix. Appendicitis may result from primary typhlitis. The inflammation of the mucosa of the cæcum may extend directly to that of the appendix, or may cause obstruction of the mouth of the appendix in the same manner as duodenitis causes obstruction of the common bile duct."

Tyson (Practice of Medicine, 1906) says: "Modern studies go to show that true appendicitis almost never begins in the cæcum but that in essentially all cases the appendix is the root of the evil. Inflammation and perforation of the cæcum are, however, possible events, though they are not clinically separable from appendicitis."

Rose and Carless in their Surgery state: "Appendicitis is not infrequently associated with a true typhlitis, probably due to a chronic constipation. The continuity of the mucous

lining of the cæcum and appendix explains this fact, which must always be taken into consideration in estimating the benefits which may be expected from removal of the appendix. Much disappointment in the non-relief of symptoms has arisen from the persistence of the typhlitis after the appendix has been removed."

Sir Frederick Treves, in Albutt's System of Medicine, says that he claims for the stercoral ulcer a definite position in the production of perityphlitis. Precisely similar ulcers, and in the same way, are produced in the appendix by the lodgment of little masses of fæcal matter in the tube. The long impacted fæcal masses in the cæcum cause catarrh which in turn gives rise to the spurious diarrhœa often seen, and this catarrh often passes on to ulceration, and if this is sufficiently deep to allow the peritoneum to be infected, then perityphlitis results, and to produce this condition it is not necessary that the cæcum should be actually and freely perforated. Finally, it must be allowed that the appendix is frequently infected from a diseased cæcum. He describes a case of perityphlitic abscess which was opened and the appendix seen to be normal in every particular. He says that the stercoral is the most common ulcer of the cæcum leading to perityphlitis, and that the dysenteric does not seem to lead to it.

Charles B. Lockwood's book on Appendicitis, 1906, contains no reference to inflammation of the cæcum that I could find. He cites two cases, however, of fæcal impaction of cæcum after appendicitis operations which caused almost similar symptoms as before the operations.

Bayard Holmes, in his book on Surgery of the Abdomen, 1904, Part I, Appendicitis, does not mention typhlitis. The same is true of Morris on Appendicitis, also of Fowler in his Surgery, of the Handbuch der Praktischen Chirurgie, and of Park's Surgery.

Deaver, Appendicitis, 1905, expresses most positive views on the subject, as follows: "There lurks in the minds of a great many men, a persisting belief in a primary typhlitis,

whether idiopathic or stercoral, and some physicians, even at the present day, seem averse to the realization of the fact that it has been proved over and over again that the appendix is *always* the original seat of trouble in acute inflammations of the right iliac fossa. Stercoral typhlitis—an inflammatory condition of the cæcum the consequence of the irritant action of fæces retained within without extrinsic cause—does not occur and must be evident to all who have had experience. By some a series of cases presenting pain, tenderness, and a more or less soft tumor in the right iliac fossa, constipation, slight fever, etc., have been recognized as stercoral typhlitis—not that any one has ever described the anatomical lesions of stercoral typhlitis, but solely upon clinical assumption. Early operation in such cases has demonstrated the presence of catarrhal and interstitial appendicitis with serous or fibrinous peritonitis. The cæcum in such cases rarely reveals evidence of disease and such as does exceptionally occur is always less marked than is that of the appendix. That stercoral typhlitis may occur, I do not deny; that it does occur I do not believe."

Ochsner expresses himself as follows: "There can be no doubt whatever in the minds of those who have had frequent opportunity to observe the pathological conditions present during the early part of the disease (inflammation of the right iliac fossa) by having operated during the first few hours after the beginning of the attack, that the disease always begins primarily in the appendix."

McNutt, in the American System of Practical Medicine (Loomis-Thompson) observes: "While clinically it is not always possible at the present time to differentiate between appendicitis and cæcitis, pathologically they must not be confounded. The fact that appendicitis is a much more frequent disease is no reason for ignoring the pathology of cæcitis. It is very doubtful whether catarrhal inflammation of the cæcum is so much less frequent than catarrh of the appendix. That ulceration, perforation and gangrene are less frequent in the cæcum is, of course, well established. Surgical operations and post-mortem examinations on cases that have been diag-

nosed as appendicitis have discovered the appendix in a healthy condition and that the case proved to be typhlitis, perityphlitis or paratyphlitis. These cases do exist although they are infrequent."

Koenig (Specielle Chirurgie, 1904, vol. ii, page 194) says: "What was earlier called stercoral typhlitis has been entirely given up by operating surgeons. There are no proofs that, without some obstruction, fæcal material remains in the cæcum, becomes hard and finally produces inflammation of the mucous membrane."

Sahli, Sonnenburg, and Ricard deny the existence of a stercoral typhlitis.

Mynter considers that typhlitis and perityphlitis, depending on stercoral ulcers, are much more common than is generally believed, and says that it has been shown to exist at autopsies and operations where the appendices were normal. He quotes Kelynack, who claims that stercoral typhlitis is very common, especially in people of advanced age and of feeble health and in the corpulent and sedentary.

Fitz writes: "It is unnecessary to say that from a stercoral cæcitis may arise an appendicitis."

H. A. Kelly (Appendicitis, 1905, pages 302 and 485) writes most instructively on the relation of typhlitis to appendicitis, and he says that he does so with the object of settling the question. His views illuminate the subject very much. I quote him verbatim. "Stercoral typhlitis is now recognized as a rare affection. It is, however, occasionally confused with appendicitis. It cannot be denied that in exceptional instances a primary, non-specific typhlitis may occur, and may give rise to an infection of the surrounding tissues and to general peritonitis. No case can be accepted as one of primary disease of the cæcum in which it is not also definitely stated that the appendix was examined and found healthy. From the recorded cases it is evident that a localized, inflammatory disease of the cæcum, when it occurs, is usually mistaken for disease of the appendix. I believe that a presumptive diagnosis could be made in some cases, if the onset of the attack were

carefully observed, if the local physical signs were minutely noted from day to day, and, above all, if sufficient importance were attached to the condition of the bowels. It will be seen by consulting the scanty information afforded in these records, that diarrhœa, dysentery and hæmorrhages were prominent features in several of the cases. Cœliotomy is the proper treatment."

So much then for the opinions of various writers. It remains to examine the recorded cases to see what evidences we have for our belief in the existence of a primary typhlitis.

Kelly in his book quotes in detail fourteen cases presenting primary lesions in the cæcum, the appendices being normal. A number of these cases showed perforations of the cæcum with a general peritonitis. (For details see his work.)

Nauwerk (*Münch. medizinische Wochenschrift,* 1901, 47, p. 1901) says that he believes that the views of many surgeons that stercoral typhlitis does not exist are erroneous. He exhibited the cæcum of a man, 78 years of age, who had suffered from constipation and who died of general peritonitis. The cæcum showed circumscribed, perforated ulcerations which he attributed to coprostasis.

Bozzi (La Clinica Chirurgica, 1904, iii) reports a case in which the examination and the history made the diagnosis of appendicitis probable. At the operation no appendix could be found after exhaustive search and there were only a few, loose adhesions in the cæcal region. He concludes: 1. That typhlitis occurs and is an independent affection. 2. That the appearances of typhlitis are the same as those of typical appendicitis. 3. That typhlitis has a considerable place in the etiology of appendicitis.

Reisinger (*Münch. medizinische Wochenschrift,* 1903, No. 40) in 350 cases of perityphlitis, operated on in the Krankenhause in Mainz, found two in which the cæcum alone was diseased.

The first patient was a man who was admitted with the symptoms of most acute perityphlitis—high fever, vomiting, distention, cessation of passage of stool and flatus, great tenderness and dulness over the appendix.

At operation a large abscess was found between the parietal peritoneum and the cæcum. The base of the abscess was formed of gray intestinal wall. Tamponade. This gray part of the intestinal wall subsequently sloughed and a fæcal fistula established itself. Later several operations were undertaken to close the fistula and in one of them the appendix was found without adhesions and perfectly normal. Patient before the operation was free from tuberculosis and had never suffered from constipation.

The second case was in a woman of thirty-seven years of age who had had frequent attacks of obstinate constipation, for which she used laxatives and enemata freely. One attack was more severe than usual and more prolonged, and after four days she was brought to the hospital with the symptoms of general peritonitis. Operation revealed free, foul, fæcal pus in the general cavity and a grayish-black cæcum with two perforations in its wall, and with the lumen filled with fæcal masses. Its walls were very friable, the mucosa much damaged. The appendix lay in the normal position. It was slightly thickened and its surface red, as was to be expected from its proximity to an acute, intestinal gangrene. Resection of the gangrenous area and suture. Death after twenty hours. Autopsy revealed no stricture of the colon or rectum. The cæcum was as described and its vessels thrombosed. The inner surface of the appendix was in all respects normal.

He makes the remark that in cases of enormous fæcal impaction, causing ulcers and gangrene, these latter almost always involve the cæcum, and that it is extraordinary that in these instances the transverse and descending colons show no signs of ulcers in their mucosæ, even when the sigmoid and rectum are strictured. In two of his cases with strictures of the rectum, operation showed gangrene of the posterior wall of the cæcum and perforations. He explains this partially by the fact that the cæcal walls are thinner and weaker than any other portion of the large intestine, which allows greater stretching and distention, in which process the mucosa is exposed to more or less severe injury by pressure. To these factors must be added the element of infection, producing thrombosis of the vessels, etc.

SICK (*Deutsche zeit. f. Chir.*, 1903, vol. lxx, p. 591) reports a case of acute typhlitis where the diagnosis of acute appendicitis was made. The onset was sudden, five days prior to the operation, with chill, fever, distention, tenderness, pain, resistance and tumor in the right iliac fossa. At operation the appendix was found normal, the cæcum filled with hard

fæcal masses, and on its lower anterior wall a bean-sized spot where an ulcer was about to perforate. Invagination of the ulcer. Recovery.

Lanz (*Beiträge zur klin. Chir.*, 1903, vol. xxxviii, p. 56) in an article on the pathology of appendicitis contends for the existence of a primary typhlitis which extends to the appendix later. To the objection why surgeons in their numerous appendectomies, do not oftener see changes in the cæcum he replies that the conditions tending to the recovery of the cæcum are much more favorable than those in the appendix, and that sometimes when we remove the latter the cæcum has already recovered. He cites a case of primary typhlitis which began with colicky pains, diarrhœa, fever and local tenderness in the right iliac fossa. On the third day an ileo-cæcal tumor developed. At operation the cæcum was found to be very thick and inflamed and the appendix to be normal.

Jordan (*Archiv. f. klin. Chir.*, vol. lxix, p. 531) gives a case of simple, localized primary typhlitis in which there was an exact microscopic examination of the cæcal wall during or soon after an attack and, in addition to which, there was an examination of the normal appendix. His case is so similar in many respects to my own case, detailed later, that I shall report it fully.

A ten-year-old girl was taken ill with typhlitis, with fever and pain, and in a short time a growing exudate, a hand's breadth in size and tender on pressure, appeared in the cæcal region. The exudate could be felt by rectum. The inflammation seemed localized and there were no serious general disturbances. The induration subsided somewhat and the general condition remained good, though obstipation persisted, and on bowel movement there were pains in the cæcal region. The diagnosis was made of an acute appendicitis in the stage of diminution, with perhaps an appendix containing pus and imbedded in lymph. Operation six weeks after the onset. The cæcum was found in the midst of inflammatory adhesions, on separating which the appendix was discovered, free and with intact surface. This latter was removed and was found normal except for a fæcal concretion, the size of a pea. On freeing the cæcum, a brawny area of infiltration, corresponding to an adhesion on its anterior surface, the size of a fifty-cent piece and 0.5 cm. thick, was found and excised. Edges of wound sutured with silk. The resected area lay below the level of the ileum and about 0.5 cm. to the outside of the resected appendix. Drainage of the abdomen. Rapid recovery. The piece

of cæcal wall removed was 3 by 2 cm. in size and on its mucous surface there was a superficial ulceration, 2.5 cm. in length and 0.5 cm. in maximum breadth. The surrounding mucosa was swollen. Microscopical examination showed no evidences of tuberculosis, but an extensive, small-celled infiltration, most marked in the mucosa and submucosa. In the infiltrated zone, staphylococci were seen. The case, therefore, presented a simple, primary acute typhlitis with perforation, which in its clinical course as well as in its anatomical details corresponds to the classical picture of a stercoral typhlitis.

Thomas (*Therapeutic Review*, Phila., Oct., 1904) writes an article on the relation between typhlitis and appendicitis. He reports two cases.

CASE I.—A woman, sixty-two years of age, had had for three weeks a persistent diarrhœa, with tenesmus and occasional vomiting. Before the diarrhœa began she had been constipated obstinately for a long time, frequently going four or five days or a week without a bowel movement. Pain in the right iliac region had been present from the beginning. On admission the temperature was 101°, pulse 90, and she was vomiting at intervals. She was distended and the tenderness in the region of the cæcum was so marked that she cried out when the abdomen was touched. The diagnosis of acute appendicitis was made and she was operated upon the next day after admission. The entire cæcum was found very much inflamed and the appendix seemed to be normal. Later, on section of this latter there was found no sign of inflammation. The cæcum, about 2 inches from the base of the appendix, seemed to threaten perforation. Drainage. Recovery.

CASE II.—A case was operated upon in the hospital, at which time it was found that the appendix had been removed at a previous operation, and the inflammation was due to ulceration of the cæcum.

FELTZ ("Chronic Typhlitis," *Gaz. Hebdom. de Med. et de Chir.*, 1902, Jan. 23, p. 74) gives the following case: A woman, forty-four years of age, was admitted to the hospital with the diagnosis of intestinal obstruction. For the preceding six months she had had attacks of colicky abdominal pain, which was not localized, and distention, with alternating diarrhœa and constipation. The diagnosis was made of chronic enteritis which had caused a narrowing of the intestinal canal. Following the giving of a laxative, there were two liquid movements, but during the next morning there were chills, very violent pains, tenderness, and rigidity in the right iliac fossa, together with increased temperature and pulse rate. Death occurred the next day, the diagnosis being peritonitis from intestinal perforation. Autopsy. Cæcum extremely distended, its walls very thin, particularly in the upper region, where the thickness in one place is reduced to that of a leaf of paper, at which level there is a small pus focus in communication with the perforation. The remaining intestine is normal. The appendix is normal in every respect. The cæcum

is filled with fæcal masses of the consistency of mastic, and intimately glued to the cæcal walls. The writer of the article thought that the perforation had probably been produced by the increased peristalsis caused by the laxative, prior to which there had been a typhlitis present.

Hemmeter (Diseases of the Intestines, 1902, p. 19) writes the following: "Numerous publications have given evidence to the fact that the cæcum may really be primarily affected and be the seat of ulceration and perforation whilst the appendix is apparently normal. These are instances of genuine typhlitis pure and simple. I have observed two cases in my experience in which typhlitis was due to the perforation of a cæcal ulcer and the appendix was normal at necropsy. The exact relation as to how many cases of cæcal and pericæcal inflammations are in the cæcum itself and how many have originated in the appendix will always be more or less conjectural. According to Maurin, who studied 136 cases of suppuration of the cæcal region, 95 were exclusively lesions of the appendix, 6 had started from the cæcum and the appendix, and 35 had involved the cæcum alone. According to the observations of Porter, Curschmann, Deutschmann and Kronlein, the occurrence of primary typhlitis can not be doubted. While admitting the extreme rarity of such conditions, we can, however, not entirely deny the existence of a simple, primary typhlitis, independent of involvement of the appendix."

Leube (Medical Diagnosis, 1904, p. 311) says: "It is well known that inflammatory diseases are very frequent in the right iliac fossa. It was formerly believed that they originated in the cæcum and were the results of an inflammatory catarrhal process due to stagnating fæcal masses (typhlitis stercoralis) and from thence the inflammatory process would spread, with or without the formation of pressure ulcers, from the cæcum to the adjacent peritoneum (perityphlitis). This view has recently been entirely abandoned, as post-mortem examinations, and especially the early operations which were undertaken to subdue these inflammatory conditions, have proved conclusively that their origin is to be found in the cæcum only in the rarest instances, and that, moreover, more

than ninety per cent. of the cases originate in the vermiform appendix."

A further complication of typhlitis arises when as a result of the chronic inflammation with ulceration of the ileocæcal valve there is such a production of connective tissue that a stenosis is produced. The following cases illustrate this condition:

WILMANNS (*Beitræge zur klin. Chir.*, 1905, vol. xlvi, p. 221) operated upon a man who had had symptoms of chronic intestinal obstruction for two months. Resection of the cæcum, for a ring-like tumor which constricted the lumen at the ileocæcal valve. On examination the mucous membrane of the cæcum was ulcerated, the submucosa much hypertrophied, and the muscular coat almost entirely replaced by connective tissue. The cæcal wall was very thick and inelastic and the ileocæcal valve represented a hard, unyielding ring, the lumen of which was no larger than would admit a lead pencil. The appendix was adherent but its lumen was free, its mucous membrane intact, even to the blind end, and its walls not infiltrated. Microscopical examination showed no evidences of new growth or of tuberculosis, etc. Wilmanns attributes the inflammation without question to the irritation produced by the intestinal contents, to a stercoral typhlitis.

EINHORN (*Munch med. Wochenschrift*, 1891, p. 121, 140) mentions two cases in which the intestinal wall was very much thickened at the valve, so that a ring-like stenosis was produced. Tuberculosis was excluded.

BRICKNER (*Medical Record*, April 28, 1906, p. 691) reported the case of a man of forty-six who had had attacks, the symptoms of which made probable a diagnosis of chronic appendicitis, complicated with some possible obstruction. At the operation, which resulted fatally, the cæcum was found much thickened, the seat of extensive and numerous ulcerations, and with a retrocæcal appendix, which was obliterated at the tip and which contained a drop of pus at its thickened base. Resection of 3 inches of the ileum and 4 inches of the cæcum. Dr. Libman, Pathologist of Mt. Sinai Hospital, considered it to be a case of primary, stercoraceous ulceration of the cæcum, to which the changes in the appendix were secondary and unimportant, and that the symptoms were due to the recurrence of attacks of swelling of the cæcum and ileocæcal valve.

Nothnagel says in reference to the kinds of intestinal ulcers which give rise to cicatrices producing stenosis, that the most frequent and most important are the tuberculous and the *stercoral* ulcerations.

Reports are increasing of late of the disappointment

experienced in numerous instances in the non-improvement of symptoms after removal of the appendix for a supposed appendicitis. The persistence of an inflammation of the cæcum may help to explain some of these cases. Fischl (*Prager med. Wochenschrift,* 1904, No. vii., p. 82) writes an article on "Typhlitis after Amputation of the Appendix." He published five cases of operations in the interval for appendicitis, in which the following disease-picture was common: Constipation, often with scybalous masses in the cæcum, and in some cases alternating with diarrhœa, pains in the ileocæcal region, where there were resistance and tenderness, loss of appetite and finally vomiting, no elevation of temperature or small. At times it ran an acute course, with very severe symptoms, or in other cases it was milder and the symptoms were chronic in character. It had nothing to distinguish it from mild appendicitis and, had the operations not been performed, would have been so diagnosed and treated. He says these cases prove that a disease exists which presents exactly the same picture as appendicitis but yet without such an inflammation being present. One can only refer the symptoms to an inflammation of the cæcum.

The recent reports of Haberer (*Archiv fur klin. Chir.,* 1905, vol. lxxvi, p. 438), from von Eiselberg's clinic in Vienna, state that of ninety-six appendicitis operations in the interval, in only fifty of the patients were the symptoms entirely relieved by the operations. Forty patients continued to have more or less marked disturbances, such as obstinate constipation, severe pains amounting in some to attacks of colic, such as they had suffered prior to the operations.

PATHOLOGY.

In considering the importance of the cæcum in the development of inflammations in the right iliac fossa, we are compelled to admit at the outset that a satisfactory pathology of diseases of the cæcum has yet to be written. We may divide primary typhlitis into two general classes: 1. Certain specific, ulcerative processes, such as actinomycosis, typhoid, dysentery, tuberculosis, and cancer, which may all

lead to perforation. To these may be added certain ulcerations and perforations depending on distal stenoses. 2. Typhlitis, simple in character, either "stercoral" or of unknown origin. Class two alone engages our attention.

The acknowledged and well established fact that the appendix is at fault in the overwhelming majority of cases of inflammation in the right iliac fossa must be accepted. Einhorn in 18,000 post mortems found that perityphlitis is of appendiceal origin in 91 per cent. of the cases and that in the remaining 9 per cent. it is due to primary perforation of the cæcum. Surgical experience, according to Treves, would lead us to place the appendiceal cases at a higher percentage of frequency. My object in this communication is to emphasize the fact that a primary typhlitis may be present and should be recognized and treated as such.

Granted that a primary, stercoral typhlitis exists, we may picture its pathology to be somewhat as follows: As a result of the coprostasis, there occurs from both mechanical and chemical irritation, an inflammation of the mucous membrane of the cæcum which may be mild in character (acute or chronic catarrh), soon subsiding, or which may be severe, being induced by stretching of the cæcal wall, causing an anæmia at the point of greatest pressure, to which may be added an abrasion of the mucous membrane, through which infection enters, resulting in venous thrombosis, capillary hæmorrhages, etc. The consequent ulcerations may remain superficial, limited to the mucous membrane, or extend deeper, the necrosis involving all the layers of the cæcum, leading to perforations, which, if slow, in evolution may be shut off by adhesions, and produce local abscesses, or, if rapid in progress, may rupture into the general peritoneal cavity, setting up a general septic peritonitis. Even without perforation of the cæcum, perityphlitic abscesses may arise, just as peri-appendicular abscesses may occur without perforation of the appendix.

It would appear as though the cæcum presented certain anatomical peculiarities which might lead to pathological con-

ditions. It is somewhat of a reservoir of large dimensions and considerable capacity, with the weakest walls of all the large intestines. In addition to which it occupies a dependent position. The most virulent germs of the entire intestinal tract frequent the lowest ileum and cæcum. Foreign bodies as well as undigested masses of food are projected into the cæcum with considerable force, leading to lesions of the mucous membrane, through which infection may enter its walls. Further the fæcal matter first becomes acid in the cæcum, having remained alkaline throughout the small intestine. This is a suggestive fact when one considers the relative frequency of gastric and duodenal ulcers in association with hyperacidity. In a few rare cases, masses of parasites (Schiller, *Beiträge zur klin. Chir.*, vol. xxxiv, 1902; also Blanchard, *Revue de Chir.*, 1906, viii, p. 306) have produced typhlitis and perityphlitis. In many of the cases it seems impossible to explain the etiology satisfactorily. Ulceration of the cæcum probably never occurs simply as the result of fæcal stasis in the cæcum.

Without the aid of the microscope, even with the abdomen open, at times it may be impossible to make a diagnosis of simple typhlitis from tuberculosis, actinomycosis, etc.

Many authorities claim that appendicitis is often secondary to inflammation of the cæcum and colon. If such be the case, then it certainly is not irrational to argue that there may be cases in which the inflammation remains limited to the cæcum, and does not extend to the appendix, in which case we have a typhlitis or cæcitis, pure and simple.

In primary typhlitis the inflammation proceeds from the cæcal mucosa outwards, while ordinarily, in typhlitis dependent on appendicitis, the inflammation progresses first from the cæcal peritoneum through its walls to the mucosa, the infection having emigrated through the walls of the appendix to the peritoneum first.

SYMPTOMS.

An extended description of the symptoms of primary typhlitis without any appendicitis being present is unnecessary. Whether acute or chronic, we must admit that they are similar

to and usually indistinguishable from appendicitis. Many give a history of obstinate constipation, others have diarrhœas, leading one to suspect an antecedent colitis. Many have repeated attacks, either severe or mild, and these may be explained as due either to disturbances in the healing of an ulcer, or to renewed fæcal impaction, with the formation of new ulcers, infection and inflammation of the cæcum and its neighborhood. Perforation and peritonitis may be an early symptom, or perityphlitic abscesses may occur. True appendicitis may be a secondary complication. It will often be impossible to ascertain which is primary, the cæcitis or the appendicitis.

TREATMENT.

In view of the impossibility of diagnosing whether the disease is confined to the cæcum alone or involves also the appendix, laparotomy is the proper procedure, dealing with the conditions as they present themselves. A perityphlitic abscess will require to be opened and drained, removing the appendix, if it be accessible, as it may prevent future complications. A perforation of the cæcum should be closed, if it can be exposed without breaking up surrounding adhesions. Gangrenous areas surrounding perforations of the cæcum should be excised, taking care to cut well out into sound tissue. Ulcerated patches, which threaten to break through the wall of the cæcum, should be infolded with one or two layers of sutures. General peritonitis will require closure of a perforation, possibly lavage of the general cavity, drainage of the pelvis and, later, the exaggerated Fowler position. Intestinal obstruction may require resection of the ileocæcal region. In some rare cases it may be impossible to tell whether we are dealing with a simple typhlitis or a cæcum affected with cancer, tuberculosis or actinomycosis. In such a case it would be well to remove a piece of the cæcal wall for microscopical examination, closing in the defect with appropriate sutures. According to the microscopical findings, it may later be determined whether a secondary operation, such as resection, will be required. At the time of the primary

operation, there may be such a degree of perityphlitis present that it would be better judgment to defer a resection of the intestine until such time as the infection of the peritoneum had subsided, which thorough drainage would favor.

As a further contribution to the subject, I wish to report the following case.

A man, forty-eight years of age, was admitted to the Medical Division of the Presbyterian Hospital on August 16, 1906. He had worked up to two weeks prior to his admission, at which time he vomited for three days almost everything that he ate. There was no blood in the vomitus nor in the stools, which were very constipated. This was followed by general malaise, loss of appetite and a sense of gastric oppression after eating. Lost fifteen pounds in past month. Had had no acute pain, fever, pulmonary nor urinary symptoms. A few years prior to his admission he had been laid up for several years with a weak back, following an injury, and he had had during this time an abscess opened over his ribs. There was present a well-marked dorsal kyphosis. Abdominal examination was negative, there being no rigidity nor any masses present nor tenderness. After one week he was discharged with the diagnosis of chronic gastritis. The man was readmitted, one month after his discharge, on September 21, 1906. After leaving the hospital, four weeks prior, he was well for one week, at which time he began again to vomit, this being brought on by the taking of food. The vomitus consisted of food and mucus, but no blood. Had severe pains in the right hypochondrium, right epigastrium and right iliac regions. Pain and vomiting have both been more or less continuous. Has had diarrhœa with mucus, alternating with constipation. There has been fever, with chills and sweating, and he has been much prostrated.

Examination on Admission.—Patient looks sick and prostrated. Temperature 102.6°, pulse 110. Leucocytes 16,600. Exquisite local tenderness and rigidity in the right iliac fossa, where there was felt the sense of a mass, somewhat rounded and slightly movable, about the size of a lemon. There was tenderness to the right on rectal examination.

It seemed to be a clear case of an acute appendicitis, with probably an encapsulated abscess. It was considered to be such

by the attendant physician. It was also deemed probable that this had followed a colitis. The patient was transferred to the Surgical Division, and was operated upon at 11 P.M., the day of his admission. Kammerer incision over the mass, which was found to be the much enlarged cæcum, free from adhesions and most intensely congested. Its peritoneal surface was dull and rough and its walls were irregularly thick and hard. In places it felt fully half an inch thick. No fæcal masses could be palpated in its interior. There was some serous fluid about the cæcum and in the pelvis, of which a culture was taken (later reported to be staphylococci). The appendix was found retrocæcal, free from adhesions, only an inch and a half long. Its peritoneal coat looked normal, glistening and not inflamed. It was removed and cut open by a bystander. Its mucous membrane looked fairly normal, possibly a little congested. It was evident at once that the appendix was not the cause of the trouble. Further examination revealed a normal ascending colon above the cæcum, and the small intestine looked perfectly healthy in every way. There were no adhesions anywhere. On account of the great thickness of the cæcum, it was deemed to be affected with either localized tuberculosis (particularly as he had an old kyphosis) or cancer, upon which an acute inflammation had been grafted. Resection seemed to be the proper procedure. The small intestine was divided, two inches from the ileocæcal junction, between clamps and the end closed. The colon was divided just proximal to the hepatic flexure between clamps and its end likewise closed. Anastomosis with silk was made between the side of the small intestine and the side of the transverse colon. Cigarette drainage of the right iliac fossa. At the conclusion of the operation, which lasted a trifle over an hour, the patient was in good condition, requiring no stimulation at the time. He died, however, the next afternoon of acute dilatation of the heart, responding in no way to all kinds of stimulation.

Pathological examination by Dr. Berkeley. The gross appearance looks like tumor of the cæcum. Microscopical examination shows simple inflammation. Culture from fluid near the cæcum gives staphylococcus pyogenes aureus. Specimen consists of a mass 4 x 3 x 2 inches, containing cæcum and adjacent gut, stump of appendix, some mesenteric and peritoneal tissues. Wall of cæcum is thickened (one-half inch thick) and papillated in

places, suggesting infiltration with growth or inflammatory tissue. There are three or four ulcerations, admitting tip of finger, on the surface of the mucous membrane of the cæcum, and these are covered with a grayish slough. Microscopical examination shows intense, acute, suppurative inflammation of the intestinal wall, necrosis in places and very general œdema. The process seems to have affected more or less all the intestinal layers at and adjacent to the cæcum. Lymph gland contains a stony, calcareous mass, one-quarter of an inch long. The gland is partly broken down under the microscope. No tuberculous structure made out. The appendix shows acute inflammation. Without question the inflammation proceeded from within the cæcum and was not communicated to it from its peritoneal surface, as ordinarily occurs in an appendicitis.

The case is instructive from many standpoints, both as to the etiology and diagnosis and treatment of the condition. It seems to me that one is forced to the conclusion that it was an instance of primary, acute, suppurative inflammation of the cæcum. While the appendix was inflamed, this could not for a moment be thought to have caused the typhlitis or the perityphlitis, for the inflammation of the appendix was mild in comparison with the intense, suppurative, necrotic inflammation of the cæcum itself. This latter had simply begun to spread secondarily to the appendix, which process was to have been expected. It is probable that the appendicitis would have become severe and dangerous at a later date. It is difficult to explain the origin of the cæcitis. He had had an antecedent constipation, which probably set up an inflammation of the mucous membrane with an abrasion to which was added an infection and ulceration which produced a perityphlitis without any perforation of the cæcum. The case illustrates also how difficult it may be to make a diagnosis, even with the abdomen open, of the pathological condition of the cæcum. This latter fact was further exemplified in a recent experience where a perityphlitic abscess, supposed to be of appendiceal origin, was opened, the appendix not being seen. In a second operation for continued suppuration, a

section of the somewhat thickened cæcum showed under the microscope carcinoma.

CONCLUSIONS.

From the evidence brought forth above, the following conclusions seem amply justified:

1. Primary, acute and chronic typhlitis occurs independently of appendicitis, dysentery, tuberculosis, actinomycosis or cancer, and is idiopathic in origin or depends on coprostatis.

2. Primary typhlitis, the appendix being normal, may lead to perforation, with the formation of perityphlitic abscess or general peritonitis.

3. The symptoms of primary typhlitis are usually identical with those of appendicitis and the indications for operation are similar in the two conditions.

4. Primary typhlitis is rare in comparison with the frequency of appendicitis.

5. The differential diagnosis of inflammatory typhlitis from tuberculosis, cancer and actinomycosis may be impossible at operation, in which case a section of the cæcum should be removed for microscopical examination.

6. The recurrence of symptoms after removal of the appendix may be due to attacks of typhlitis, the treatment for which consists in the regulation of the diet and the use of oil enemata, etc.

7. The danger of a primary typhlitis consists in the liability to the rupture of an ulcer and to the development of appendicitis.

8. Purgatives are contraindicated in inflammations of the right iliac fossa because of the danger of rupturing an ulcer in the cæcum or appendix, or of breaking up the adhesions about an abscess.

9. The treatment of primary typhlitis consists in laparotomy, removal of the appendix, closure of any perforation if possible, invagination of any threatening perforation of the cæcum, drainage of the right iliac fossa and the removal of a piece of the cæcal wall for microscopical examination, if that be necessary to establish the diagnosis.